STEREO INTEGRATED AMPLIFIER

# A-85

# SERVICE MANUAL

## MICROPROCESSOR EDITION

KENWOOD

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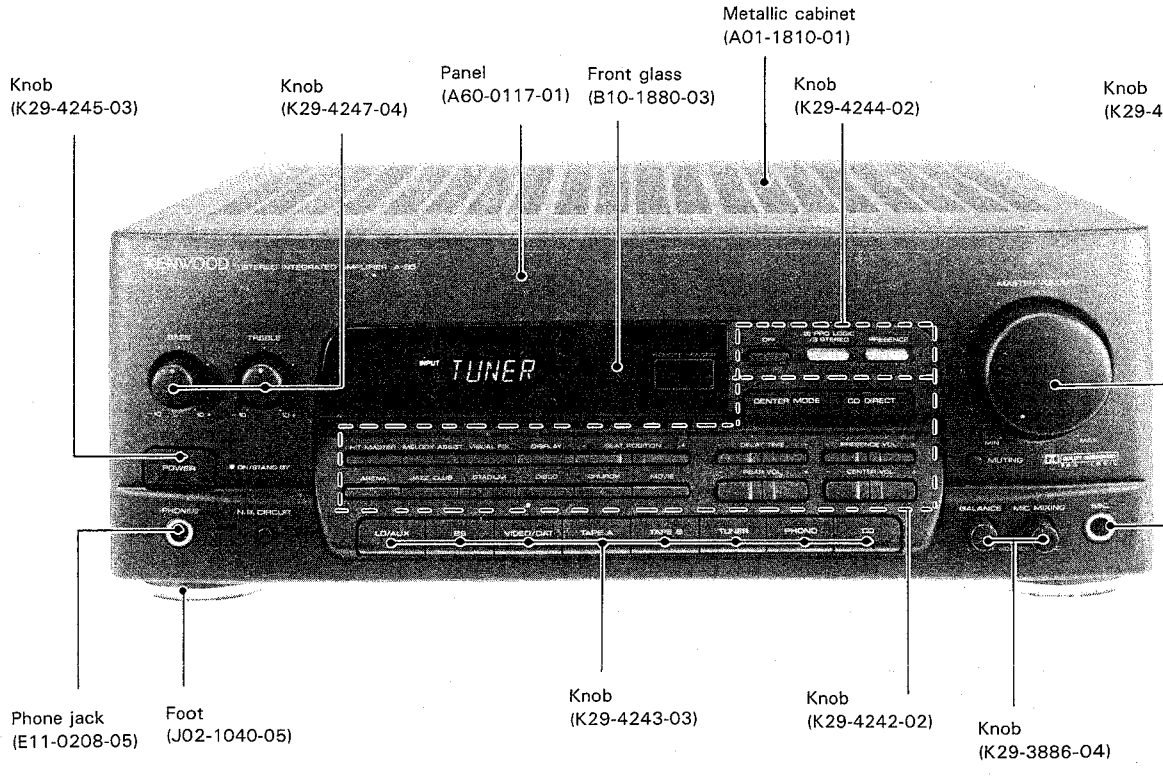
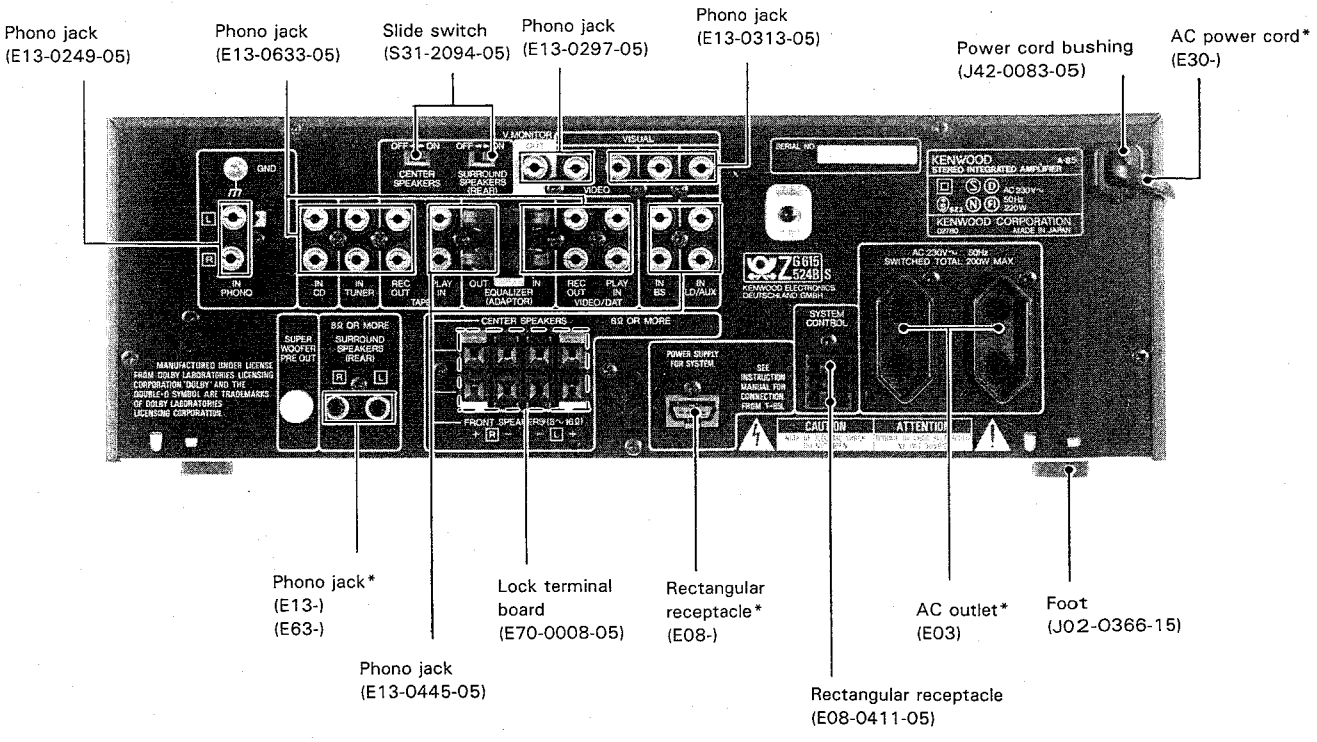
B51-4343-10 (S) 1941

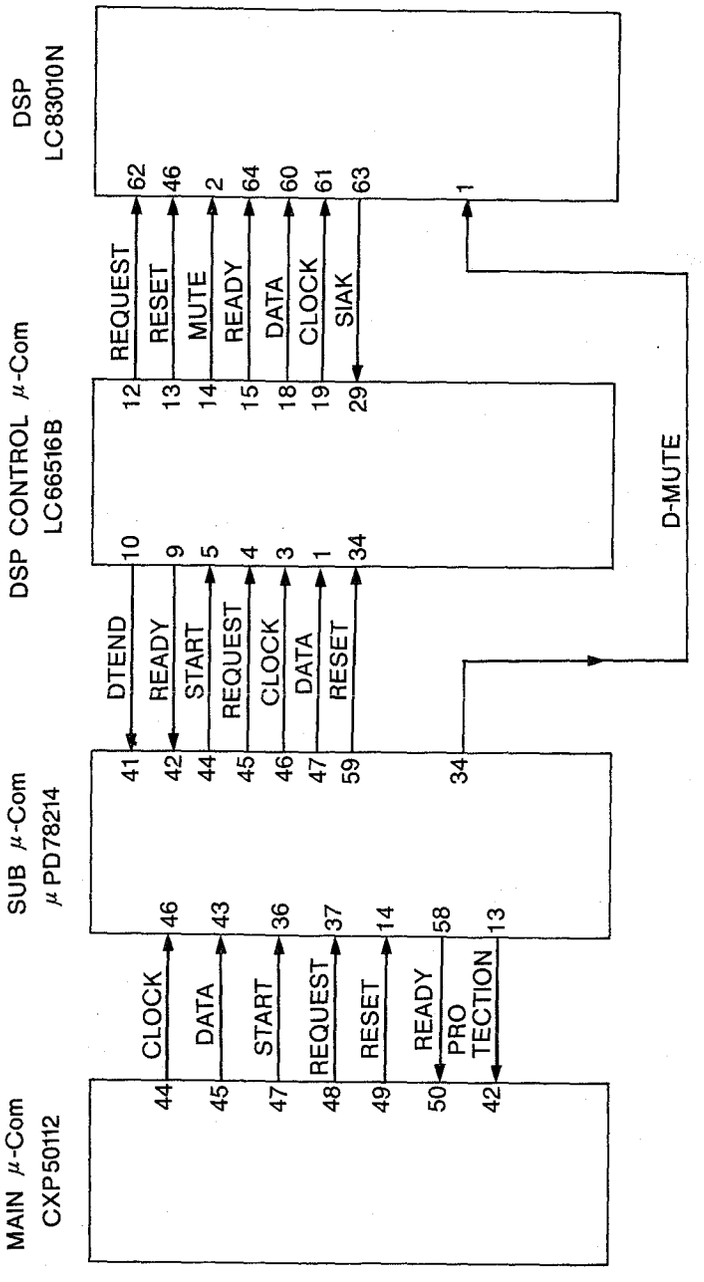


# A-85

# CIRCUIT DESCRIPTION

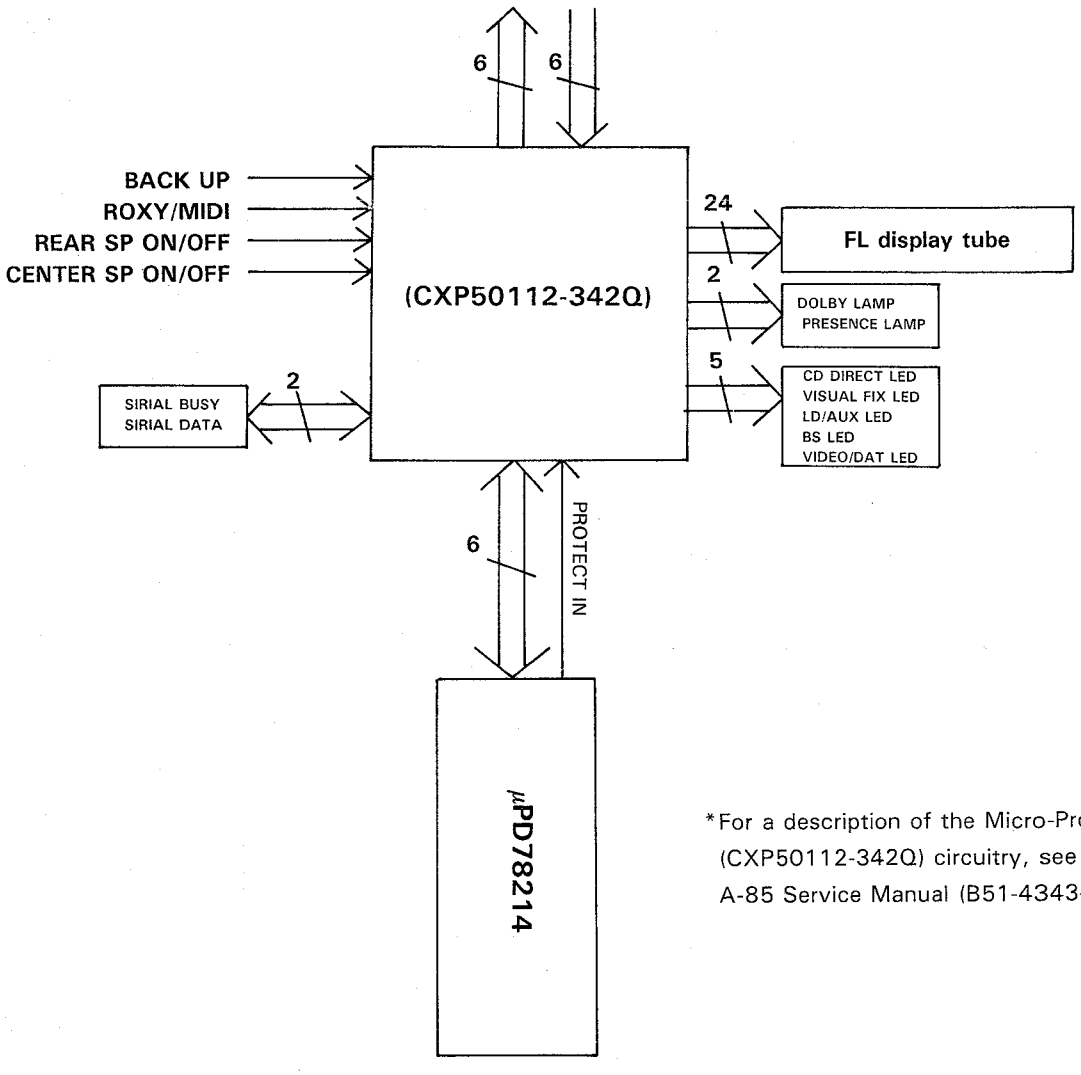
Micro processor



## Microprocessor

### Block diagrm of microcomputer's peripheral equipment

| | | | | | | |
|---|---|---|---|---|---|---|
| SCAN 5 | OFF | PRESENCE | 3STEREO | CD DIRECT | MUTE | CENTER MODE |
| SCAN 4 | HIT MASTER | POWER | MELODY ASSIST | JAZZ CLUB | NB CIRCUIT | ARENA |
| SCAN 3 | DISCO | LD/AUX | VISUAL FIX | STADIUM | BS | DISPLAY |
| SCAN 2 | CHURCH | VIDEO DAT | TAPE A | MOVIE | SEAT-P FRONT | SEAT-P REAR |
| SCAN 1 | DELAY DOWN | TAPE B | TUNER | REAR UP | DELAY UP | REAR DOWN |
| SCAN 0 | PHONO | P-VOL. UP | CENTER UP | CD | P-VOL. DOWN | CENTER DOWN |
| | RETURN 0 | RETURN 1 | RETURN 2 | RETURN 3 | RETURN 4 | RETURN 5 |

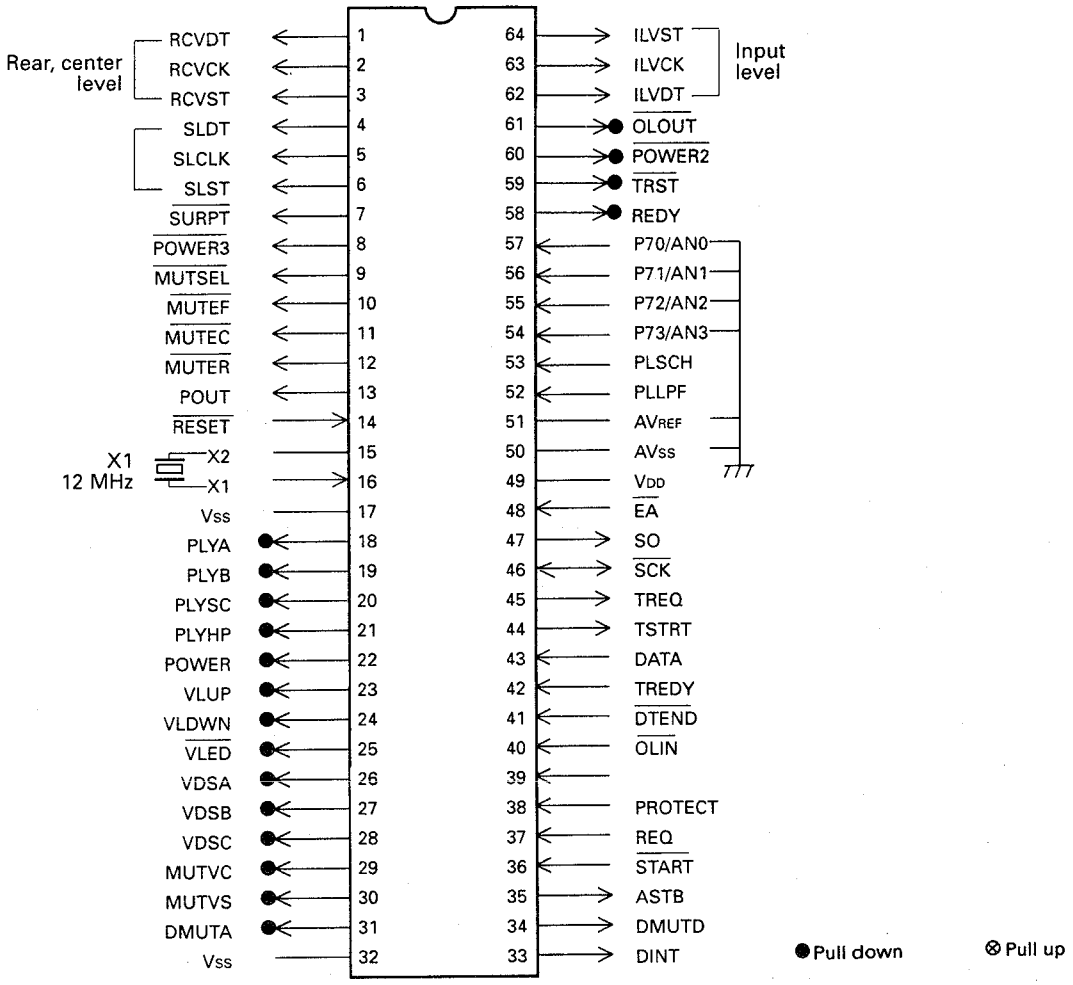



*For a description of the Micro-Processor (CXP50112-342Q) circuitry, see page 6 of the A-85 Service Manual (B51-4343-00).

# CIRCUIT DESCRIPTION

## System control microprocessor : μPD78214CW

### Terminal connection diagram




### Pin function

| Pin No. | Pin name | I/O | Name | Description |
|---|---|---|---|---|
| 1 | P03 | O | RCVDT | Rear,center electric volume |
| 2 | P04 | O | RCVCK | TC9213P control pin CK signal |
| 3 | P05 | O | RCVST | STB signal |
| 4 | P06 | O | SLDT | Switch array \| IC DATA signal |
| 5 | P07 | O | SLCLK | TC9162N, 9163N \| CK signal |
| 6 | P67 | O | SLST | TC9164N control pin \| ST signal |
| 7 | P66 | O | SURPT | Surround (DSP IC) oscillate control H: Stop L: Oscillate |
| 8 | P65 | O | POWER3 | Port used to synchronize with the timing of the power up of the D/A converter |
| 9 | P64 | O | MUTSEL | Selector mute pin H: MUTE OFF L: MUTE ON |
| 10 | P63 | O | MUTEF | Front signal mute pin H: MUTE OFF L: MUTE ON |
| 11 | P62 | O | MUTEC | Center signal mute pin H: MUTE OFF L: MUTE ON |
| 12 | P61 | O | MUTER | Rear signal mute pin H: MUTE OFF L: MUTE ON |
| 13 | P60 | O | POUT | Pin that notifies the main μ-com of protection detection |
| 14 | RESET | I | | Reset pin |

# CIRCUIT DESCRIPTION

**Pin function**

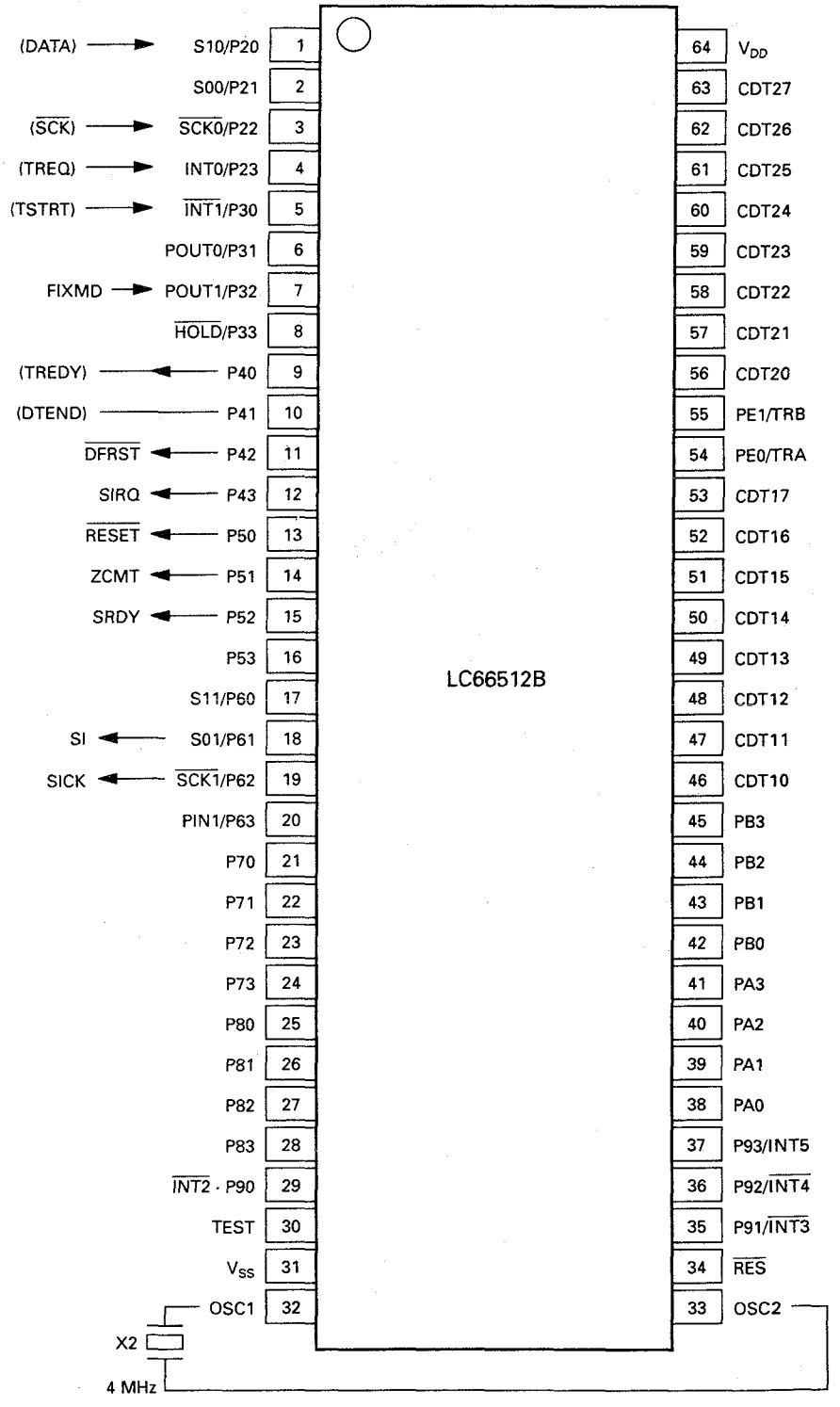
| Pin No. | Pin name | I/O | Name | Description |
|---|---|---|---|---|
| 15 | X2 | | | System clock oscillator connect pin |
| 16 | X1 | I | | |
| 17 | Vss | O | | Gnd |
| 18 | P57 | O | RLYA | Speaker A relay control pin L: Power OFF H: Power ON |
| 19 | P56 | O | RLYB | Speaker B relay control pin L: Power OFF H: Power ON |
| 20 | P55 | O | RLYSC | Speaker (SURROUND CENTER) relay control pin L: Power OFF H: Power ON |
| 21 | P54 | O | RLYHP | Headphone relay control pin L: Power OFF H: Power ON |
| 22 | P53 | O | POWER | Powersupply control pin L: POWER OFF H: POWER ON |
| 23 | P52 | O | VLUP | Master volume UP control pin |
| 24 | P51 | O | VLDWN | Master volume DOWN control pin |
| 25 | P50 | O | $\overline{\text{VLED}}$ | Master volume LED control pin L: LED ON H: LED OFF |
| 26 | P47 | O | VDSA | Video selection control pin |
| 27 | P46 | O | VDSB | |
| 28 | P45 | O | VDSC | |
| 29 | P44 | O | MUTVC | Composie video mute control pin |
| 30 | P43 | O | MUTVS | S ch video mute control pin MUTE is OFF only entered the VIDEO 3 mode |
| 31 | P42 | O | DMUTA | DSP analog mute control pin SURROUND ON: MUTE OFF<br>SURROUND OFF: MUTE ON When switched : MUTE ON |
| 32 | Vss | | | Gnd |
| 33 | P41 | O | DINT | No used |
| 34 | P40 | O | DMUTD | DSP digital mute control pin |
| 35 | ASTB | | | No used |
| 36 | P20/NMI | I | $\overline{\text{START}}$ | START signal input pin for communicating to main μ-com |
| 37 | P21 | I | REQ | REQ signal input pin for communicating to main μ-com |
| 38 | P22 | I | PROTECT | Protection signal detection pin |
| 39 | P23 | | | No used |
| 40 | P24 | I | $\overline{\text{OLIN}}$ | Over level signal detection pin |
| 41 | P25 | I | $\overline{\text{DTEND}}$ | DTEND signal input pin for communicating to DSP IC control μ-com |
| 42 | P26 | I | TREDY | TREDY signal input pin for communicating to DSP IC control μ-com |
| 43 | P27/SI | I | DATA | DATA signal input SI port of communicating to mainl μ-com |
| 44 | P30 | O | TSTRT | START signal output pin for communicating to DSP IC control μ-com |
| 45 | P31 | O | TREQ | REQ signal output pin for communicating to DSP IC control μ-com |
| 46 | P32/SCK | I/O | $\overline{\text{SCK}}$ | SCK I/O pin for communicating to main μ-com and DSP IC control μ-com |
| 47 | P33/SO | O | SO | SO signal output pin for communicating to DSP IC control μ-com |
| 48 | EA | | | No used |
| 49 | VDD | | | Power supply pin |
| 50,51 | AVss, AVREF | | | No used |
| 52 ~57 | P75 ~ P70 | I | | No used |
| 58 | P34 | O | REDY | REDY signal output pin for communicating to main μ-com |
| 59 | P35 | O | $\overline{\text{TRST}}$ | DSP IC control μ-com reset pin |
| 60 | P36 | O | $\overline{\text{POWER2}}$ | Port used to synchronize with the timing of the power up of the D/A converter |
| 61 | P37 | O | OLOUT | Over level output pin L: FL light H: FL not light |
| 62 | P00 | O | ILVDT | Input level electric volume DATA signal |
| 63 | P01 | O | ILVCK | CK signal |
| 64 | P02 | O | ILVST | ST signal |

| | V1 | V2 | V3 |
|---|---|---|---|
| VDSA | 0 | 1 | 1 |
| VDSB | 1 | 0 | 1 |
| VDSC | 1 | 1 | 0 |

| Monitor -OUT | | | | |
|---|---|---|---|---|
| COMPOSITE S-OUT | V1 | V2 | V3 | V1 ~ V3: Input of VIDEO 1 ~ VIDEO 3 |
| – | V2 | V3 | | |

# CIRCUIT DESCRIPTION

**DSP μ-Com: LC66516B**



# CIRCUIT DESCRIPTION

**Pin function**

| Pin No. | Pin name | I/O | Name | Description |
|---|---|---|---|---|
| 1 | SI0/P20 | I | DATA | DATA signal input pin from system control μ-com |
| 2 | SO0 | | | No used |
| 3 | $\overline{SCK}$/P22 | I | $\overline{SCK}$ | Clock signal input pin from system control μ-com |
| 4 | INT0/P23 | I | TREQ | TREQ signal input pin from system control μ-com |
| 5 | INT1/P30 | I | TSTRT | TSTRT signal input pin from system control μ-com |
| 6 | Pout0/P31 | I | | No used |
| 7 | Pout1/P32 | I | FIXMD | Fixation terminal mode setting pin.<br>Low: Normal mode High: Fixation terminal mode |
| 8 | $\overline{HOLD}$/P33 | I | TSTRT | HOLD mode control input |
| 9 | P40 | O | TREDY | TREDY signal output pin to system control μ-com |
| 10 | P41 | O | DTEND | At mode change (command 0 ~ 2) and during clear the DRAM, transfer the data to DSP IC. |
| 11 | P42 | O | $\overline{DFRST}$ | Digital filter reset signal output pin (Normally High) |
| 12 | P43 | O | SIRQ | DSP IC LC83010 SIRQ signal output pin |
| 13 | P50 | O | $\overline{RES}$ | DSP IC LC83010 Reset signal output pin (Normally High) |
| 14 | P51 | O | ZCMT | Zero cross mute control signal output pin |
| 15 | P52 | O | SRDY | DSP IC LC83010 SRDY signal output pin |
| 16,17 | P53, SU/P06 | | | No used |
| 18 | SO1/P61 | O | SI | DSP IC LC83010 SI signal output pin |
| 19 | $\overline{SCK}$1/P62 | O | SICK | DSP IC LC83010 SICK signal output pin |
| 20 ~ 28 | PIN1/P63<br>P70 ~ P73<br>P80 ~ P83 | O | | No used |
| 29 | $\overline{INT2}$/P90 | | | DSP IC LC83010 SIAK signal input pin |
| 30 | TEST | | | CPU test pin. Connected to Vss. |
| 31 | Vss | | | GND pin |
| 32 | OSC1 | I | | System clock oscillator pin |
| 33 | OSC2 | O | | System clock oscillator pin |
| 34 | $\overline{RES}$ | I | | System reset signal input pin |
| 35 ~ 37 | P91 ~93<br>$\overline{INT3}$ ~ $\overline{INT5}$ | | | No used |
| 38 ~ 45 | PA0 ~ PA3<br>PB0 ~ PB3 | I<br>I | | No used |
| 46 ~ 53 | PC0 | I | CDT10 ~ 17 | Correspond to bit 0 ~ 7 of data address 1 of command data in the fixed pin mode. |
| 54 | PE0/TRA | I | | Correspond to 2 low-order bits of command data in the fixed pin mode. The fixed pin mode can be set to 00, 01,02 or 03. |
| 55 | PE1/TRB | I | | |
| 56 ~ 63 | P35 | I | CDT20 ~ 27 | Corresponds to bit 0 ~ 7 of data address 2 of command data in the fixed pin mode. |
| 64 | VDD | | | Power supply |



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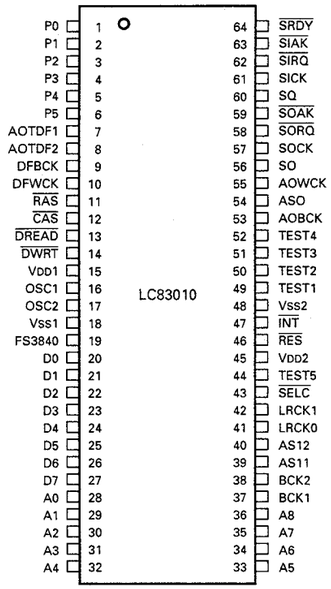
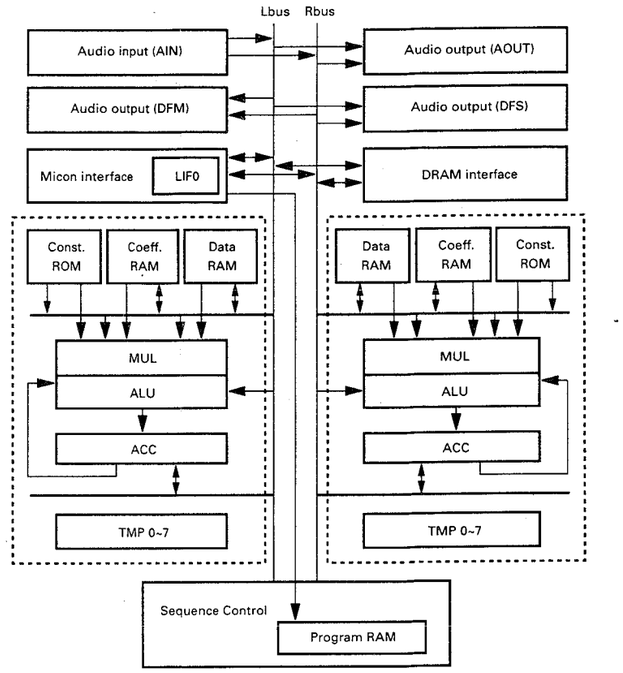
CIRCUIT DESCRIPTION

**DSP IC : LC83010**

**Pin connection**




**Block diagram**



# CIRCUIT DESCRIPTION

**Pin function**

| Pin No. | Pin name | I/O | Description |
|---|---|---|---|
| 1 | P0 | I | Digital mute - High: mute; Low: unmute during DSP program |
| 2 | P1 | I | Soft muting - High during DSP program: Soft mute with time constant of 1 ms; Low: Unmute |
| 3 | P2 | O | *Overflow detection* If the input data from the A/D converter becomes the maximum positive or negative value a low signal is output, held for 100 ms, and goes high. |
| 4 | P3 | I | Phase shifter control The phase shifter is turned on and off during 3-channel sound field program. Low: on; High; off. Always used with "LOW". |
| 5 | P4 | I | Direct sound add control Control whether direct sound is added in the DSP during sound field program. High: Add; Low: Do not add. Always used with "LOW". |
| 6 | P5 | I/O | General input/output port No used (open) |
| 7 | AOTDF2 | O | Audio data output 1 C ch and S ch data is output during Dolby pro logic and 4-ch sound field. If 3 stereo and 3-CH are set, only C ch data is output. |
| 8 | AOTDF2 | O | Audio data output 2 Decoded L/R data is output for Dolby. The L/R sound field signal is output for sound field. |
| 9 | DFBCK | O | Bit clock for AOTDF 1 and 2 48 fs bit clock is output. |
| 10 | DFWCK | O | Word clock for AOTDF 1 and 2 No used |
| 11 | $\overline{RAS}$ | O | For row address strobe DRAM access control |
| 12 | $\overline{CAS}$ | O | For column address strobe DRAM access control |
| 13 | $\overline{DREAD}$ | O | DRAM *read control signal* |
| 14 | $\overline{DWRT}$ | O | DRAM write control signal |
| 15, 45 | VDD1, 2 | I | Power supply pin |
| 18, 48 | VSS1, 2 | | GND pin |
| 16 | OSC1 | I | Crystal oscillator pin |
| 17 | OSC2 | O | Crystal oscillator pin |
| 19 | FS3840 | O | *384fs output pin* |
| 20 ~ 27 | D0 ~ D7 | I/O | DRAM data I/O pin |
| 28 ~ 36 | A0 ~ A8 | O | DRAM address output pin (A8 is no used) |
| 37 | BCK1 | I | No used |
| 38 | BCK2 | O | Bit clock output pin 32fs bit clock output for A/D |
| 39 | ASI1 | I | No used |
| 40 | ASI2 | I | Audio data input pin 2 Data input from A/D |
| 41 | LRCKO | O | L/R clock output pin |
| 42 | LRCKI | I | No used |
| 43 | $\overline{SELC}$ | I | Self oscillation and external clock input switching |
| 44 | TEST 5 | O | Test pin Used by open |
| 46 | $\overline{RES}$ | I | Reset pin |
| 47 | $\overline{INT}$ | I | No used |
| 49 ~ 52 | TEST 1 ~ 4 | I | Test pin Connected to GND |
| 53 | AOBCK | O | No used |
| 54 | ASO | O | Audio data output (overflow detection) Used by the the KR-V9030 to detect overflow for Dolby. |
| 55 ~ 59 | A0WCK etc. | | No used |
| 60 | SI | I | Serial data input from µ-com |
| 61 | SICK | I | Serial clock input of SI input |
| 62 | $\overline{SIRQ}$ | I | SI request signal input |
| 63 | $\overline{SIAK}$ | O | Output signal to indicate that the SI serial communication is executing |
| 64 | $\overline{SRDY}$ | I | Input signal to indicate that the mail box communication is finished |

DSP ↔ µ-com interface



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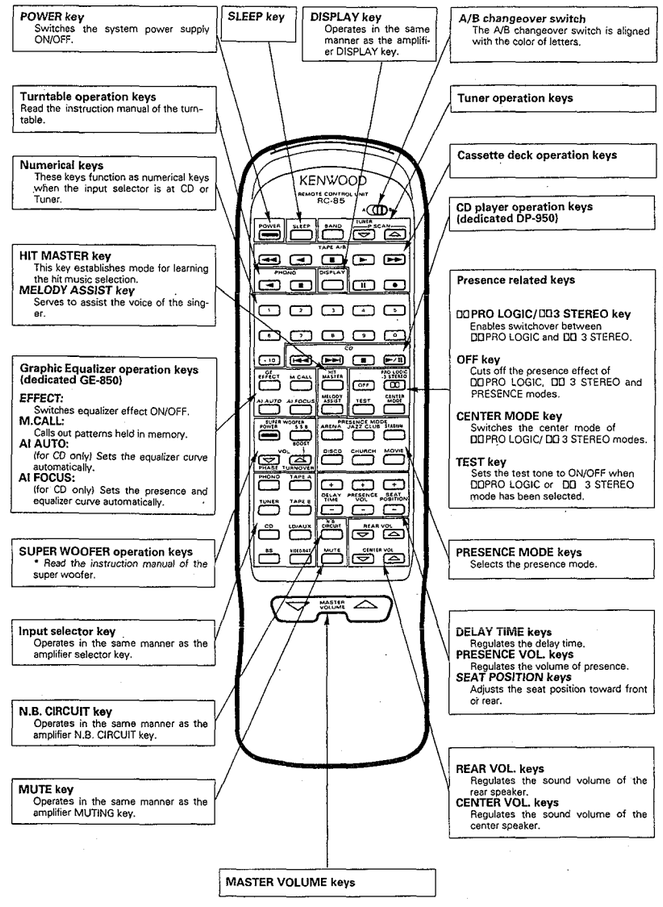
# REMOTE CONTROLLER

The illustration for the Remote Controller depicted in the A-85 Service Manual (B51-4343-00) is NOT correct. Use the illustration shown below in it's place. The part numbers however, are the same.


POWER key
Switches the system power supply ON/OFF.
SLEEP key
DISPLAY key
Operates in the same manner as the amplifier DISPLAY key.
A/B changeover switch
The A/B changeover switch is aligned with the color of letters.
Turntable operation keys
Read the instruction manual of the turntable.
Tuner operation keys
Numerical keys
These keys function as numerical keys when the input selector is at CD or Tuner.
Cassette deck operation keys
CD player operation keys (dedicated DP-950)
HIT MASTER key
This key establishes mode for learning the hit music selection.
MELODY ASSIST key
Serves to assist the voice of the singer.
Presence related keys
□□PRO LOGIC/□□3 STEREO key
Enables switchover between □□PRO LOGIC and □□ 3 STEREO.
OFF key
Cuts off the presence effect of □□PRO LOGIC, □□ 3 STEREO and PRESENCE modes.
CENTER MODE key
Switches the center mode of □□PRO LOGIC/□□ 3 STEREO modes.
TEST key
Sets the test tone to ON/OFF when □□PRO LOGIC or □□ 3 STEREO mode has been selected.
Graphic Equalizer operation keys (dedicated GE-850)
EFFECT:
Switches equalizer effect ON/OFF.
M.CALL:
Calls out patterns held in memory.
AI AUTO:
(for CD only) Sets the equalizer curve automatically.
AI FOCUS:
(for CD only) Sets the presence and equalizer curve automatically.
SUPER WOOFER operation keys
* Read the instruction manual of the super woofer.
PRESENCE MODE keys
Selects the presence mode.
Input selector key
Operates in the same manner as the amplifier selector key.
DELAY TIME keys
Regulates the delay time.
PRESENCE VOL. keys
Regulates the volume of presence.
SEAT POSITION keys
Adjusts the seat position toward front or rear.
N.B. CIRCUIT key
Operates in the same manner as the amplifier N.B. CIRCUIT key.
REAR VOL. keys
Regulates the sound volume of the rear speaker.
CENTER VOL. keys
Regulates the sound volume of the center speaker.
MUTE key
Operates in the same manner as the amplifier MUTING key.
MASTER VOLUME keys
KENWOOD
REMOTE CONTROL UNIT
RC-85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